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Generalization in Sports: The impact of how athletes process their failures and successes

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Abstract

The way athletes prospect future success or failure following a single success or failure is called 'generalization'. This study examined the roles of an abstract "why" vs. a concrete "how" processing style on athletes' generalization to future performances and to their self-concept (N = 668). We hypothesized that athletes in the "why" condition would show more negative/positive generalization. We also explored the impact of how individuals in the "why" condition attributed their success or failure performance. There was no main difference between processing styles but athletes with more functional attributions showed more positive generalization and athletes with more dysfunctional attributions showed more negative generalization. These results show that attributions could be driving the effects of an abstract "why" processing style on generalization. For athletes with an elevated depression score it might be particularly important to focus on generalizations following success and train these athletes to make functional attributions.

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Introduction

Some athletes fail over and over again, but still show strength to overcome these failures and expect that success will happen to them eventually. Other athletes, however, perform poorly and think that they are worthless as an athlete and that they will never compete very well. This impact of one failure on the way individuals perceive expectations of future outcomes and even the way they perceive themselves following this failure has been called the process of *generalization*. (Carver, 1998) Hence, athletes could generalize the outcome of one particular competition to future competition and even to their totality of their self-concept and to broader domains in life (Watkins, 2008).

However, why is it that some athletes easily generalize from a particular performance to future performances and their self-worth whereas other athletes might fail but do not generalize this failure to future performances and their overall self-worth. One possible mechanism towards generalization might be the way athletes retrospectively process their failures or successes (Van Lier, Moulds, Raes, 2015a; Watkins, 2008). In clinical settings, some forms of repetitive negative thinking such as worry and rumination have been identified as crucial causal pathways towards anxiety and depression (see Watkins, 2008). More recently, adopting an abstract ruminative processing style focused on the causes, meanings and implications of events (vs. a concrete processing style focused on how the event unfolded or what one could hear, smell and touch during the event; Moberly & Watkins, 2006) has been identified as fundamental for the effects of repetitive thought on outcomes such as generalization (e.g., Watkins, 2008; Van Lier et al., 2015a), problem solving (Watkins & Moulds, 2005), emotional recovery after failure (Watkins, 2004), feelings of worthlessness and incompetency (Vassilopoulos & Watkins, 2009). Indeed, in these studies the abstract thinking manipulation caused individuals to generalize *more* over situations and stimuli, to be *worse* in

problem solving tasks, to show *less* emotional recovery after failure and to show *more* feelings of worthlessness and incompetency.

In the sport context these retrospective repetitive thought processes are under researched, although it seems reasonable to suggest that athletes probably think back or ruminate about their past failures and successes (Uphill & Dray, 2009). However, we recently examined the impact of adopting an abstract processing style (vs. a concrete processing style) following a success performance on subsequent positive generalization (Van Lier et al., 2015a). The present study extends our previous study by examining the impact of adopting an abstract processing style (i.e., thinking about "why") versus a concrete processing style (i.e., thinking about "how") on generalization from success (i.e., positive generalization) as well as generalization from failure (i.e., negative generalization).

Abstract Thinking About Positive Events and Generalization From Success

The effects of abstract "why" vs. concrete "how" processing style have been mainly examined when in relation to negative events (Watkins, 2008, 2011). Hence, less is known about the consequences of processing style for positive events. Recently however, more studies using positive materials or events (e.g., success experiences) have examined the influence of processing style on various outcomes. As such, several studies found that abstract processing following a success did not increase mood (e.g., Hetherington & Moulds, 2013) and following a positive autobiographical memory recall (e.g., Werner-Seidler & Moulds, 2012; Nelis, Holmes, Palmieri, Bellelli, & Raes, 2015).

Furthermore, the generalization literature has mainly focused on negative generalization (e.g., Kernis, Brocknell, Frankel, 1989; Carver, 1998; or see overgeneralization in depression, Beck, 1976). However, Klar and colleagues (1997) and van den Heuvel and colleagues (2012) found that depressed individuals showed less positive generalization (and more negative generalization) than healthy controls. Another study showed that positive

generalization following success experience relates to risk for mania (Eisner, Johnson & Carver, 2008).

Only recently, two studies examined the impact of some form of abstract versus concrete processing on generalizations from success (Van Lier et al., 2015a; Zunick et al., 2015). In Van Lier and colleagues' study abstract processing of a success performance in sport participants lead to greater positive generalization; however, this effect was more pronounced for individuals with higher self-esteem. In contrast, Zunick and colleagues (2015) showed that individuals with negative self-views benefited more from their directed abstraction technique to enhance generalization from a success experience. Therefore, there may be unknown moderating variables of abstract thought that enables it to be constructive. Hence, we examine under which circumstances abstract processing of a positive experience leads to positive generalization. Therefore, in this study we are explicitly assessing how sport participants attribute their performance, as a possible important content aspect of abstract thought.

Abstract Thinking About Negative Events and Generalization From Failure

Both the processing mode (Watkins, 2011) and generalization literature (e.g., Kernis, Brocknell, Frankel, 1989; Carver, 1998) have mainly focused on negative events (e.g., failures) and have focused on their relation with psychopathology (e.g., depression, Carver, 1998; anxiety, Lissek et al., 2008). Experimental manipulations of abstract (vs. concrete) processing style following negative events have produced maladaptive outcomes such as poor emotional recovery after failure (Watkins, 2004), negative global self-judgments (Rimes and Watkins, 2005), feelings of worthlessness and **in**competency (Vassilopoulos and Watkins, 2009), and poor problem solving (Watkins & Moulds, 2005).

Studies using conditioning and memory paradigms in students have previously shown that abstract processing of negative events leads to increased negative generalization (Van Lier, Vervliet, Vanbrabant, Lenaert, Raes, 2014; Van Lier, Vervliet, Boddez, Raes, 2015b). In Van

Lier and colleagues (2014), the effect of abstract processing on negative generalization was only found in dysphoric students. It should be noted that most manipulations of processing style have effects only in vulnerable groups (e.g., Watkins & Moulds, 2005). This study will specifically examine the impact of abstract processing on generalization from a failure performance in an athlete sample using a paradigm adopted from Van Lier et al. (2015a).

Attributions

It has been noted in Van Lier et al. (2015) that causal attributions (e.g., Biddle, Hanrahan, & Sellars, 2001) may be a crucial part of the abstract processing of an event. It has been shown that causal attributions influence the expectation of a successful putt in novice golfers (e.g., Le Foll et al., 2008). The stability (i.e., perceived temporal duration of the cause) of the attribution seems to be important for future expectancies of success and failure (Weiner, 1986). For example, when an athlete attributes failure (success) to his/her low (high) ability, which is a stable attribution, these results in reduced (increased) expectancies of future success at that task or competition (Le Foll et al., 2008). Hence, in this study we explicitly measured the causal attributions that athletes made when processing their success or failure in an abstract way. Therefore, we are able to disentangle the 'process' aspect (i.e., abstract and concrete thought is seen as a process aspect, see Watkins, 2008, p. 185) from the content aspect (i.e., causal attributions). Note that the constructs of attributions and generalization are different, in that attribution deals with causes while generalization does not, and they have been found to be only moderately correlated (Klar et al., 1997; Epstein, 1992; Kernis, Brockner & Frankel, 1989).

The Present Study and Hypotheses

This study assesses both generalization to the self (Carver, 1998) and generalization across situations (Klar et al., 1997; van den Heuvel, 2012). These two generalization concepts, however, are not completely homogeneous (McLeod & Williams, 1990) and have rarely been

examined together (see van den Heuvel et al., 2012 and Van Lier et al., 2015a for exceptions). Similar to Van Lier et al. (2015a), we hypothesized that participants who were instructed to think back about a good personal sports performance, where they performed above their expectations, while adopting an abstract processing style (relative to a concrete processing style) would indicate a higher probability of a good performance in the future (i.e., generalization across situations) and would obtain higher scores on the generalization from success questionnaire (i.e., generalization to the self). If these predictions are supported, the findings would indicate that an abstract processing style has an adaptive impact following success and in turn, increases positive generalization.

Conversely, in the present study we also hypothesized that participants who were instructed to think back about a bad personal sports performance, where they performed below their expectations, while adopting an abstract processing style (relative to a concrete processing style) would indicate a higher probability of a bad performance in the future and would score more highly on the generalization from failure to the self questionnaire. If these predictions are supported, the findings would indicate that an abstract processing style has a maladaptive impact following failure and, in turn, increases negative generalization.

As noted above, it is often found that manipulations of processing style have effects only in vulnerable groups (Watkins & Teasdale, 2004; Watkins & Moulds, 2005, Van Lier et al., 2014, 2015). We therefore reasoned that self-esteem and depression score might act as crucial factors moderating the effect of processing style. Specifically, with regard to failures, individuals with low self-esteem tend to have more negative reactions, e.g., more negative thoughts and feelings about themselves, compared to individuals with high self-esteem (e.g., Kernis et al., 1989; Libby et al., 2011). Thus, for a bad performance we expected that the effect of processing style would be greatest among individuals with low self-esteem or dysphoria and more specifically that abstract processing would lead to more negative generalization in these

individuals. With respect to attributions, if this content aspect of abstract processing style is the driving force for the hypothesized effect, we expect that sport participants with "dysfunctional" attributions compared to "functional" attributions (see Le Foll et al., 2008) would show increased *negative* generalization.

In the context of positive situations and events, it has been posited that abstract processing in general is adaptive, but nevertheless might become maladaptive in the context of dysphoria or low self-esteem (Watkins, 2008; Watkins, 2011). Therefore, and similar to what Van Lier et al. (2015) found, we hypothesized that individuals with low self-esteem would not benefit from either concrete or abstract processing of their good performance, whereas individuals with high self-esteem would benefit more from an abstract processing style (see also Hetherington & Moulds, 2013). With respect to attributions, if this content aspect of abstract processing style is the driving force for the hypothesized effect, we expect that sport participants with "functional" attributions compared to "dysfunctional" attributions (see Le Foll et al., 2008) would show increased *positive* generalization.

Another aim in this study was to explore the differences between dysphoric and non-dysphoric athletes to replicate the findings of Klar and colleagues (1997) and van den Heuvel and colleagues (2008). The results of these studies showed that individuals with higher depressive symptoms displayed more negative generalization but also less positive generalization than individuals with lower depressive symptoms. Therefore, we hypothesized that individuals with higher depressive symptoms would display more negative generalization and less positive generalization than individuals with lower depressive symptoms, replicating the findings from Klar and colleagues (1997) and van den Heuvel and colleagues (2008).

Method

Participants

The study consisted of sport participants from several different sports. The sport participants, recruited via their sport organizations and social media, were told that they had to be 16 years or older and play sports in a competition but that the level of this competition was not important to enter the online study. Hence, we tried to include as many sport participants from very different sports and backgrounds. As an incentive to participate in the study the participants were given the chance to win a coupon worth 100EUR to spend at the performance center at University of Leuven (Bakala Academy Performance Center). A total of 1,834 sport participants gave consent to enter the study. However, because of the length of the study only 798 participants completed the crucial generalization measures.

The experiment in this study was conducted in accordance with the Declaration of Helsinki and approved by the local ethics committee of the University of Leuven.

Materials

Most of the materials used in this study are similar to the previous study of Van Lier et al. (2015), except in this study the Dutch translations were used. However, in this study we included a questionnaire that measures generalization to other life domains and the Causal Dimension Scale. Also, in this study we a-priori asked for a negatively or positively perceived competitive performance. All the questions were translated in Dutch and/or the Dutch translations of the respective questionnaires were used.

Sport-related questions. In this section participants had to complete sport specific questions such as: "Do you play or do any sport in competition?"; "Do you compete in an individual or teamsport?"; "Which sport do you compete in?"; "On which level do you compete?"; "On average, how many times a week do you engage in sport- related activity?"; "How many hours do you spend (training and game) per week on average during your sport

season?"; "Do you work with a coach/trainer?"; "In which phase of the season are you at this moment?"; "How important is your sport for you?".

Rosenberg self-esteem scale. This scale is a well-validated measure of global self-esteem (**Rosenberg, 1965;** for the Dutch version of the RSES see Franck, De Raedt, Barbez, & Rosseel, 2008). Participants completed the Dutch 10-item RSES with a scale ranging from 0 (*strongly agree*) to 3 (*strongly disagree*). Internal consistency for the RSES in this sample was high (α = .86).

Attention check question. Similar to Van Lier et al. (2015) we inserted an attention check question in-between the items of the self-esteem scale: "I am not reading the questions of this survey."

Attitudes toward self - generalization. The participants completed the four-item generalization subscale of the ATS **(**Carver and Ganellen, 1983). This subscale ranged from 1 (*I agree a lot*) to 5 (*I disagree a lot*). This subscale specifically measures the tendency to generalize from a single failure to the broader sense of self-worth. Internal consistency for the generalization subscale of the ATS in this sample was acceptable (α = .79).

Positive overgeneralization. The Positive Overgeneralization questionnaire (POG) is a 16-item self-report questionnaire that measures the generalization from a positive outcome to the respondent's broader sense of self and hence is opposite to the ATS generalization that measures the tendency to generalize from a single failure to the broader sense of self- worth **(**Eisner et al., 2008; Carver and Johnson, 2009). . From the three subscales of the POG only "lateral generalization" (i.e., generalizing from a good outcome in one domain to positive outcomes in other areas of life or life in general; Eisner et al., 2008, p. 159) was used in further analyses. The POG in this sample had a good internal consistency (α= .89).

Repetitive thinking scale-trait (RTS-T). The questionnaire consists of 24 items that measures abstract and concrete processing of sport performance events. Hence, the RTS-T has

an abstract and concrete processing subscale. Each item is scored on 5-point scale ranging from 0 (*never*) to 4 (*almost always*; Samtani and Moulds, unpublished). Internal consistency for the RTS-T in this sample was high (α = .90).

Depression anxiety stress scale (DASS 21). We used the 7-item depression subscale of the DASS21 (Lovibond & Lovibond, 1995; Dutch version: de Beurs, van Dyck, Marquenie, Lange, & Blonk, 2001). Each item is scored on 4-point scale ranging from0 ("*did not apply to me at all*") to 3 ("*applied to me very much, or most of the time*"). In line with the manual for the DASS21, we multiplied the total value of scales by two (Lovibond & Lovibond, 1995). The DASS manual uses a score of 14 as a cut off for moderate depression (Lovibond & Lovibond, 1995). Internal consistency for the depression subscale in this sample was high (α = .86).

Positive and negative affect scales (PANAS). The PANAS consists of two scales, both 10 items, which measures positive affect (e.g., "interested," "excited") and negative affect (e.g., "distressed," "upset"; Watson et al., 1988). Participants gave ratings on a 5-point scale ranging from 1 ("*very slightly*") to 5 ("*extremely*") and were asked to rate the extent to which each item reflects how they feel at that point in time. The PANAS is a reliable and valid measure of affect (Watson et al., 1988). Internal consistencies for the pre- and post-PANAS in this sample were acceptable (α= .77 and α= .79).

Attitudes toward self—generalization particular event (negative and positive). We used the same adapted version of the original ATS- generalization (Carver and Ganellen, 1983) as in the previous study (Van Lier et al., 2015a; see also Libby et al. 2011). Hence, for generalization from failure (negative condition) respondents were asked to rate how much they agreed or disagreed with the following statements on a scale from 1 ("*I agree a lot*") to 5 ("*I disagree a lot*"): "When I think about this performance, I feel like I am a failure"; "Even though this performance is a failure, it's just a one-time occurrence where I did not meet a specific goal" (reverse-scored); "When I think about this performance, I wonder if I can do well at

anything at all"; "This single performance influences how I feel about myself overall" (Van Lier et al., 2015a, p. 5). Internal consistency for this scale in this sample was acceptable (α= .72).

For generalization from success (positive condition) respondents were asked to rate how much they agreed or disagreed with the following statements: "When I think about this performance, I feel like I am a success"; "Even though this performance is a success, it's just a one-time occurrence where I met a specific goal" (reverse-scored); "When I think about this performance, I feel if I can do well at everything"; "This single performance influences how I feel about myself overall" (Van Lier et al., 2015a, p. 5). Internal consistency for this scale in this sample was unacceptably low with α= .40.

Generalization other life domains. To measure generalization to a broader area than just sports we asked how successful they found themselves for the following three broad domains: "Family (other than marriage or children)"; "Marriage/intimate relations"; "Friends/social life". They were given a scale ranging from 0 ("*Totally not successful*") to 100 ("*Very successful*"). Internal consistency for this scale in this sample was modest (α= .53).

Causal dimension scale II (CDSII; McAuley, Duncan, Russell, 1992). This scale was only presented for participants in the abstract condition. The Revised CDSII (McAuley, et al., 1992) is a 12-item self-report scale assessing four attribution dimensions: "locus of causality" (i.e., the degree to which the attribution is perceived as internal or external), "stability" (i.e., the degree to which the attribution is stable or variable over time), "personal control" (i.e., the degree to which the athlete has control over attribution) and "external control" (i.e., the degree to which other people have control over the attributed factor). The instructions read: "Think back about the specific reason or reasons from your performance you have written above. The items below concern your impressions or opinions of this cause or causes of your performance. Tick the box below for each of the following items." At either side of the 9-point

scale was a possible extreme attribution of the cause. For example, for the stability dimension one item read "*permanent*" at one extreme of the scale and "*temporary"* at the other side of the scale. The CDSII has shown good factorial validity for the four-factor model within adult sport populations (McAuley et al., 1992). Internal consistencies in this sample were: α= .72 for "locus of causality"; α= .80 for "stability"; α= .75 for "personal control"; α= .81 for "external control".

Procedure

Sports organizations in Flanders (registered with Sport.Vlaanderen, the government organization listing all official sports organizations in Flanders) and The Netherlands were contacted by email by the first author to help distribute our online study to their members. We asked the sport organization to distribute the flyer and link with accompanying info regarding the study on their website and social media platforms. Ideally, we asked the organizations to send an email with the information we provided about the study to all their eligible members. The flyer of the study was also distributed on social media platforms such as Twitter and Facebook. The organizations and athletes were told the study was about helping and disturbing thinking styles in sports. The organizations and athletes were also told the study was about how athletes conceive the mental side of their sport and their attitudes around mental coaching in sports which was part of a different study. Hence, all eligible competitive sport participants over 16 years of age were invited to take part in this online study that would take up approximately 30 minutes. Participants were given the chance to win a 100EUR coupon to use at a performance center at the university. The participants gave consent by ticking the box under "I give consent" on the screen. Participants were randomly allocated to either the abstract or concrete condition. All participants went through the same questionnaires in an identical order before they received an abstract or concrete processing induction (i.e., the abstract and concrete questions about their selected performance).

Participants were randomly assigned to think about a recent performance where they performed below their expectations (negative condition) or where they performed above their expectations (positive condition). The participants were asked to write down in a couple of sentences the specifics of the race or game (e.g., on Saturday I competed in a 5km street run and had my personal best on that course). For example, in the negative condition the exact wording was: "Think about a recent performance where you performed BELOW your expectations. Describe this competition shortly. For example: "On Sunday I ran the 400m Hurdles on the regional championships. I ran far below my PB and had expected a better result"; "On Saturday I played a handball game with my team BXL against Antwerp. The team did well but my performance was not as good." Following this description participants were asked to indicate the time frame of when this event took place (i.e., ranging from "*one day ago*" to "*more than a month ago*"). The objective outcome (i.e., win, lost, first 10, podium, personal best, etc), and their subjective rating of the performance were the last questions in this section. *"How would you rate your own performance? Please reflect your own opinion or feeling on how you performed. For example: Even when you might have lost as a team, you could still think your own individual performance was good or vice versa."* This last question was anchored on a 7-point scale ranging from "*very bad*" to "*very good*."

Participants were asked to think about their negative or positive performance in the **competition**. The inductions of abstract and concrete processing styles were modeled on that used by Moberly and Watkins (2006) and equal to those used in Van Lier et al. (2015). Hence, in the abstract condition participants were instructed to think about why they performed the way they did. "Think about the meanings and consequences of your performance. Think about what this performance says about you as a person. Think about this performance in words and meanings, by using verbal language, as if you were talking (Van Lier et al., 2015a, p. 4)." In the concrete condition participants were instructed to focus on the game/race. "Let your

performance in that game/race play out again in your mind, just like you play a video about the performance; make a detailed picture about your performance at the game/race in your mind (Van Lier et al., 2015a, p. 4)." Equal to Van Lier et al. (2015) the participants were then instructed to answer every question on the next page at their own pace with a minimum of a half a line and a maximum of three lines per question in order to further reinforce the induced processing style. The abstract questions were: "What did your performance mean to you?"; "What were the consequences and implications of your performance for you?"; "How did you think about yourself after your performance?"; "Why did you feel the way you felt after your performance?"; "Why did you perform the way you did?"; "What do you think about your performance? What does this performance say about your capacities?"; "Was your performance like you had expected? Why was it or why was it not like you expected?" (Van Lier et al., 2015a, p. 4). The concrete questions were: "Play out the performance in your mind. What could you see around you? What did you see?"; "Play out the performance in your mind. What could you smell? Was the air fresh? Was it cold/warm?"; "Play out the performance in your mind. What could you hear?"; "Play out the performance in your mind. Which feelings occurred during your performance?"; "Play out the performance in your mind. What were the physical sensations you felt during your performance?"; "Play out the performance in your mind. What did you do right before the game/race?"; "Play out the performance in your mind. What did you do after the race/game or the rest of the day?" (Van Lier et al., 2015a, p. 4).

In order to measure generalization about the future participants were asked to imagine themselves in the future and in their future performances and to rate the probability of a good performance in the future. Thus, they were asked to indicate the likelihood that their future performance would be equal to the performance they described in this study. Participants could indicate their likelihood estimation by ticking on a horizontal axis ranging from 0 ("*I will certainly NOT perform like this*") to 100 ("*I will definitely perform like this*"). The situations

in the future for which they were asked to give their likelihood estimation were: "Next training session?"; "Next game/race/competitive event?"; "Next month?"; "Whole Season?"; "Next season?"; "Whole career?" (Van Lier et al., 2015a, p. 5). Internal consistency for this scale in this sample was high (α= .94)

The order of questionnaires and induction was as follows: "Demographics and sports-related questions"; "RSES"; "RTS-T"; "ATS- generalization"; "DASS 21-Depression subscale"; "POG"; "PANAS (pre-induction)"; "Questions about latest sport performance (randomized negative or positive)"; "Abstract/concrete induction (randomized)"; "Generalization over the future"; "Generalization to their self-concept: ATS-particular positive event of ATS-particular negative event"; "Generalization other life domains"; "PANAS (post-induction)"; "CDSII".

Following the completion of all questionnaires the participants were given the opportunity to mark any comments about the study or inform us about any technical issues they had completing this study. Finally, participants were presented with a short debriefing and information about the study and further contact details.

Data Analysis

First, we first ran a linear regression analysis for each dependent variable separately (i.e., generalization over the future; generalization to their self-concept; generalization to broader life domains). We start by looking at positive generalization and then negative generalization. The dependent variable generalization over the future was averaged over the 6 items, and generalization to the self-concept was the total score on 4 items and generalization to other life domains was the total amount of generalization averaged over the 3 items. The model included self-esteem (centered around its mean), Condition (Abstract vs. Concrete), and their interaction. Moreover, looking at positive generalization, we also controlled for chronic tendency for positive generalization (i.e., "lateral generalization" POG centered around its

mean) and its interaction with condition. That way, we were able to isolate the relationship between processing mode about the recalled sport performance and generalization from that particular performance. When looking at negative generalization, we controlled for chronic tendency for negative generalization (i.e., ATS generalization centered around its mean) and its interaction with condition. That way, we were able to isolate the relationship between processing mode about the recalled sport performance and generalization from that particular bad performance.

Second, we included attributions in the model. Hence, similar to Le Foll and colleagues (2008) a composite attribution score was created for each participant by calculating the sum of the participant's ratings on three attributional dimensions (Locus of Causality, Personal Control, and Stability). A high composite attribution score reflects functional attributions for a positive performance (i.e., Internal, Controllable, and Stable), while a low composite attribution score reflects dysfunctional attributions for a positive performance (i.e., External, Uncontrollable, and Unstable). For attributions from a failure, a high composite attribution score reflects dysfunctional attributions (i.e., External, Uncontrollable, and Stable), while a low composite attribution score reflects functional attributions for a negative performance (i.e., Internal, Controllable, and Unstable; Le Foll et al., 2008). Thus, individuals were divided into "functional" and "dysfunctional" groups based on whether they were in the bottom half or top half of the composite attribution score by means of median-split. Therefore, we compare an "Abstract-Functional" group with an "Abstract-Dysfunctional" group and the Concrete processing group. We ran a linear regression analysis for each dependent variable separately with two dummy variables to specify the group. The "Abstract-Functional" group functioned as the reference group. We also did the analyses using the continuous attribution composite score. We included these analyses as well.

We also set out to replicate the findings from Klar and colleagues (1997) and van den Heuvel and colleagues (2008) that individuals with higher depressotypic symptoms show more negative generalization and less positive generalization than individuals with lower depressotypic symptoms. Therefore, individuals with a DASS depression score equal to or higher than 14 were coded as Dysphoric whereas individuals with a score lower than 10 as Non-Dysphoric. We conducted a 2 (Group: Dysphoric, Non-Dysphoric) x 2 (Valence: positive, negative) ANOVA with generalization over the future and generalization to the self-concept as dependent variables.

Results

Participant Characteristics

Eighty-four Participants were not eligible because they were younger than 16. Out of the 714 eligible individuals that completed the full study, 46 participants failed the attention check question and were therefore also excluded. Hence, a total of 668 individuals (364 males) were included in the study. Their mean age was 27.57 years (*SD* = 12.37; age range: 16–75) and 46% competed in an individual sport. The sample consisted of 9.6% professional athletes, 33.7% competed on an national level, 38.9% on a provincial level, 12% on a regional level and 5.6% were recreational athletes.

Induction Check

We looked at the amount of characters that were written across conditions to check whether this did not differ between the respective conditions. Hence, a 2 (Induction: Abstract vs. Concrete) × 2 (Performance Valence: Negative vs. Positive) ANOVA was conducted with the average amount of characters written for the seven questions as dependent variable. There was no main effect of Induction, $F = 0.09$, $p = 0.76$, and there was no main effect of Performance Valence, $F = 2.58$, $p = 0.11$, and no Induction × Performance Valence interaction, $F = 0.72$, $p = 0.40$.

Pre-Post Mood PANAS

To check whether the inductions of abstract and concrete processing modes had a differential effect on mood, measured with the PANAS, a 2 (Induction: Abstract vs. Concrete) × 2 (Performance Valence: Negative vs. Positive) × 2 (Time: Pre- vs. Post- induction) repeated measures ANOVA was conducted with negative and positive affect as dependent variables. For negative affect, there was a main effect of Time, $F(1,660) = 78.44$, $p < 0.001$, $\eta_p^2 = .11$, and a significant Performance Valence × Time interaction, $F(1,660) = 3.99$, $p < .05$, $\eta_p^2 = .01$. Participants in general showed a decrease in negative affect. However, participants who had to describe a positive performance ($M_{\text{difference}} = 1.64$) decreased more in negative affect than the participants who had to describe a negative performance ($M_{\text{difference}} = 1.04$), $t(662) = -1.97$, $p = .05$.

For positive affect, there was a main effect of Time, $F(1,660) = 29.87$, $p < .001$, $\eta_p^2 = .04$, and a marginally significant Performance Valence × Time interaction, $F(1,660) = 3.31$, $p = .07$, $\eta_p^2 = .01$. Participants in general decreased in positive affect. However, the participants who had to describe a positive performance ($M_{\text{difference}} = 0.57$) decreased marginally less in positive affect than the participants who had to describe a negative performance ($M_{\text{difference}} = 1.14$), $t(662) = 1.81$, $p = .07$.

The Impact of Processing Style on Positive Generalization

Similar to Van Lier et al. (2015) we predicted that participants who thought about their performance in an abstract way ("Why," "Reasons," "Causes") compared to a concrete way ("How," "Perceptual") would show greater positive generalization from the particular sports performance. We also predicted that this effect would be moderated by self-esteem.

Positive generalization over the future. For generalization over the future, we found no effect of Condition, $t < 1$; there was an effect of Self-Esteem, $t(330) = 2.35$, $p < .05$, $\beta = .18$, but no significant Condition × Self-Esteem interaction, $t < 1$ (Table 1).

Positive generalization to their self-concept. For generalization to their self-concept, we found no effects of Condition, Self-Esteem and no significant Condition × Self-Esteem interaction, all *t*'s < 1 (Table 1). However, note that the cronbach's alpha of this measure is low.

Positive generalization to broader life domains. For positive generalization to the broader life domains, we found a marginally significant effect of Condition, $t(318) = -1.95$, $p = .05$, $\beta = -.10$, an effect of Self-Esteem, $t(318) = 4.51$, $p < .001$, $\beta = .33$, and no significant Condition × Self-Esteem interaction, $t = 1.36$ (Table 1). As predicted, participants in the abstract condition showed more positive generalization to broader life domains relative to participants in the concrete condition; however, this relationship was not moderated by self-esteem.

Attributions for positive performance. As mentioned, the way athletes attributed their causes may be a crucial part of abstract processing a performance. If it is not abstract processing per se but only when individuals process their positive performance in an abstract way while holding functional attributions, then individuals will show increased positive generalization.

Positive generalization over the future. For the Abstract-Functional group ($B = 72.51$) positive generalization was higher than the Abstract-Dysfunctional group ($B = -7.46$, $t(333) = -2.51$, $p < .05$, $\beta = -.17$) and marginally significant higher than the Concrete group ($B = -4.74$, $t(333) = -1.87$, $p = .06$, $\beta = -.13$; See Figure 1). Using the continuous composition score, we found no effect of Condition, $t < 1$; but there was an effect of functional attributions for the abstract condition, $t(328) = 3.11$, $p < .01$, $\beta = .17$.

Positive generalization to their self-concept. For the Abstract-Functional group ($B = 13.27$) positive generalization was higher than the Abstract-Dysfunctional group ($B = -1.27$, $t(336) = -3.01$, $p < .01$, $\beta = -.20$) and higher than the Concrete group ($B = -0.80$, $t(336) = -2.23$,

$p < .05$, $\beta = -.15$; See Figure 1). Using the continuous composition score, we found no effect of Condition, $t < 1$; but there was an effect of functional attributions for the abstract condition, $t(331) = 2.79$, $p < .01$, $\beta = .15$. However, note that the cronbach's alpha of this measure is low.

Positive generalization to broader life domains. For the Abstract-Functional group ($B = 71.42$) positive generalization was higher than the Abstract-Dysfunctional group ($B = -7.19$, $t(321) = -2.68$, $p < .01$, $\beta = -.19$) and higher than the Concrete group ($B = -7.22$, $t(321) = -3.12$, $p < .01$, $\beta = -.22$; See Figure 1). Using the continuous composition score, we found a main effect of Condition, $t(317) = 2.08$, $p < .05$, $\beta = .11$, and an effect of functional attributions for the abstract condition, $t(317) = 3.45$, $p < .01$, $\beta = .19$.

The Impact of Processing Style on Negative Generalization

In this study we also measured negative generalization. We predicted that participants who thought about their performance in an abstract way ("Why," "Reasons," "Causes") compared to a concrete way ("How," "Perceptual") would show greater negative generalization from the particular sports performance. We also predicted that this effect would be moderated by self-esteem.

Negative generalization over the future. For negative generalization in their sport, we found no effect of Condition, $t < 1$; there was a marginal effect of Self-Esteem, $t(320) = -1.87$, $p = .06$, $\beta = -.17$, with high self-esteem individuals showing less negative generalization. There was no significant Condition × Self-Esteem interaction, $t < 1$ (Table 2).

Negative generalization to their self-concept. For negative generalization to the self, we found no effect of Condition, $t(321) = 1.11$, an effect of Self-Esteem, $t(321) = -5.42$, $p < .001$, $\beta = -.39$, and no significant Condition × Self-Esteem interaction, $t(321) = 1.39$ (Table 2).

Negative generalization to broader life domains. For negative generalization to the broader life domains, we found no effect of Condition, $t(306) = -1.50$, an effect of Self-Esteem,

$t(306) = 4.09$, $p < .001$, $\beta = .34$, and no significant Condition × Self-Esteem interaction, $t < 1$ (Table 2).

Attributions for negative performance. If it is not abstract processing per se but only when individuals process their negative performance in an abstract way while holding dysfunctional attributions, then we expect that individuals will show increased negative generalization.

Negative generalization over the future. For the Abstract-Dysfunctional group ($B = 52.29$) negative generalization was marginally significantly higher than the Abstract-Functional group ($B = -7.99$, $t(325) = -1.75$, $p = .08$, $\beta = -.12$) and marginally significant higher than the Concrete group ($B = -7.77$, $t(325) = -1.96$, $p = .05$, $\beta = -.14$; See Figure 1). Using the continuous composition score, we found no effect of Condition, $t = 1.12$; but there was a marginal significant effect of dysfunctional attributions for the abstract condition, $t(325) = 1.79$, $p = .07$, $\beta = .10$.

Negative generalization to their self-concept. For the Abstract-Dysfunctional group ($B = 9.37$) negative generalization was marginally significant higher than the Abstract-Functional group ($B = -1.02$, $t(326) = -1.73$, $p = .09$, $\beta = -.12$) but equal to the Concrete group ($B = -0.03$, $t < 1$, $\beta = -.003$; See Figure 1). Using the continuous composition score, we found no effect of Condition, $t = -1.27$; but there was an effect of dysfunctional attributions for the abstract condition, $t(326) = 2.32$, $p < .05$, $\beta = .13$.

Negative generalization to broader life domains. For the Abstract-Dysfunctional group ($B = 65.63$) negative generalization was stronger than the Abstract-Dysfunctional group but not significant ($B = 3.61$, $t(311) = 1.31$, $p = .19$, $\beta = .09$) and somewhat less strong than the Concrete group, although not significant ($B = -2.10$, $t < 1$, $\beta = -.06$; See Figure 1). Using the continuous composition score, we found a main effect of Condition, $t(311) = 2.10$, $p < .05$, $\beta =$

.12, however, in the opposite direction that we expected. There was no effect of dysfunctional attributions for the abstract condition, $t(311) = -1.23$, $p = .22$, $\beta = -.07$.

Depressive Symptoms and Positive and Negative Generalization

Generalization over the future. There was a main effect of Valence, $F(1,586) = 45.00$, $p < .001$, $\eta_p^2 = .07$ and also a significant Valence × Group interaction, $F(1,586) = 4.90$, $p < .05$, $\eta_p^2 = .01$. Independent t-tests revealed that dysphoric sport participants ($n = 50$, M=59.35, SD=20.08) showed less positive generalization than non-dysphoric sport participants ($n = 249$, M=69.77, SD=18.32), $t(298) = 3.61$, $p < .001$, whereas for negative generalization there was no difference between dysphoric (M=47.34, SD=20.91) and non-dysphoric individuals (M=45.94, SD=30.47), $t < 1$. Both the dysphoric group as the non-dysphoric group show more positive generalization over the future than negative generalization, $t(98) = -2.93$, $p < .01$ and $t(488) = -10.53$, $p < .001$ (Figure 2).

Generalization to their self-concept. There was a main effect of Valence, $F(1,590) = 40.65$, $p < .001$, $\eta_p^2 = .06$, a main effect of Group, $F(1,590) = 17.45$, $p < .001$, $\eta_p^2 = .03$, and also a significant Valence × Group interaction, $F(1,590) = 42.18$, $p < .001$, $\eta_p^2 = .07$. Independent t-tests revealed that dysphoric sport participants ($n = 50$, M=11.82, SD=2.76) showed marginally significantly less positive generalization than non-dysphoric sport participants ($n = 252$, M=12.60, SD=2.62), $t(300) = 1.90$, $p = .06$. Whereas dysphoric individuals ($n = 50$, M=11.86, SD=4.04) showed more negative generalization compared to non-dysphoric individuals (M=8.27, SD=3.31), $t(290) = -6.70$, $p < .001$. The non-dysphoric group shows more positive generalization to their self-concept than negative generalization, $t(492) = -16.13$, $p < .001$ but interestingly the dysphoric group does not differ in negative and positive generalization, $t < 1$ (Figure 3).

"Generalization in Sport: The Impact of How Athletes Process Their Failures and Successes" by Van Lier J, Raes F
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Discussion

The first aim of this study was to examine the impact of an abstract vs. concrete processing style on both positive and negative generalization to the self and across situations (i.e., two forms of generalization rarely assessed in one study). We aimed to replicate the findings of Van Lier et al. (2015) that abstract processing of a success performance lead to more positive generalization, especially among sport participants with high self-esteem. In this study we have also examined the impact of processing style following a failure performance. We hypothesized that especially among sport participants with low self-esteem an abstract processing style would lead to increased negative generalization. Neither the results for positive nor those for negative generalization supported this hypothesis. Hence, we have not been able to replicate the findings of Van Lier et al. (2015a) concerning positive generalization and we have not found evidence that abstract processing *per se* has any effect on negative generalization following a failure.

Attributions

A second aim of this study was to examine (the role of) the causal attributions that sport participants make when they are instructed to think in an abstract way (i.e., to think about the causes and implications of the performance). It has been suggested that attributions could be a driving force for the effect of an abstract processing style (see Van Lier et al., 2015a). Hence, we hypothesized that sport participants with "functional" attributions (see Le Foll et al., 2008) when processing their success performance in an abstract way would show increased positive generalization as compared to those with "dysfunctional" attributions (see Le Foll et al., 2008). In contrast, when individuals had to process their failure performance in an abstract way, sport participants with "dysfunctional" attributions would show increased negative generalization compared to those with "functional" attributions. We acknowledge that individuals in the concrete processing group could also have specific attributions. However, the nature of the

concrete induction was such that they were asked not search for causal explanations and therefore we did not assess attributions in this group.

As mentioned we were unable to find an effect of abstract processing per se leading to positive generalization and negative generalization, but interestingly the results did support the attributions-hypotheses. Sport participants with more internal, controllable, and stable attributions showed more positive generalization and sport participants with more external, uncontrollable, and stable attributions showed more negative generalization (for both measures of generalization to the self and across situations/over the future).

These findings clearly suggest that abstract processing by itself might not be particularly adaptive following success performances or maladaptive following failure performances. However, when thinking about causes and implications of their performance (i.e., abstract processing), athletes are able to make certain attributions, which can trigger positive or negative generalization depending on their nature. This may be why we were not able to replicate the findings of Van Lier and colleagues (2015a; i.e., that abstract processing leads to positive generalization) in this study. While attributions were not assessed in the earlier study, it is possible that as a group, the participants in Van Lier and colleagues (2015a) made more functional attributions. If so, this could be a reason why adaptive effects of abstract processing were found. The present findings show the importance of accounting for the content of abstract processing (e.g., causal attributions) when considering its effects on generalization.

These findings can increase our understanding of the specific conditions under which an abstract processing style is adaptive for positive events and maladaptive for negative events. There is conflicting evidence concerning the adaptive effects of abstract thoughts for positive events. For example, Zunick and colleagues (2015) have shown that individuals with negative self-views benefited *more* from their directed abstraction technique to enhance generalization from a success experience, whereas the outcome of Van Lier and colleagues' (2015a) study

suggests that individuals with low self-esteem benefited *less* from their abstract processing style. The respective abstract processing inductions of the respective studies differed to the extent that Zunick and colleagues' (2015) induction presupposed that participants were responsible for their success: "The directed abstraction prompt, on the other hand, presupposed that participants were responsible for their success ("earned," "achieve"), used abstract language ("were able," "I am"), used the phrase "Explain WHY" to encourage abstract generalizations rather than concrete descriptions, and included a sentence-stem completion ending in "because I am:", which was designed to elicit abstract generalizations to a personal ability (e.g., "good at estimating"; see Zunick et al., 2015, p.7)". Van Lier and colleagues' (2015) induction was more open-ended and did not include such presuppositions. Therefore, the induction of Zunick and colleagues might have enhanced the use of functional attributions for individuals with negative self-views.

The present study is the first to simultaneously examine the impact of abstract processing while explicitly taxing the causal attributions during this abstract processing. Future research is encouraged to explicitly focus on these functional and dysfunctional attributions of athletes while processing negative and positive events in an abstract way.

Depressive Symptoms and Negative and Positive Generalization

We have also examined the degree of negative and positive generalization to the self and across situations in dysphoric sport participants as compared to non-dysphoric sport participants. We expected to find more negative generalization and less positive generalization among dysphoric sport participants as compared to non-dysphoric sport participants, in replication of the findings of Klar and colleagues (1997) and van den Heuvel and colleagues (2008).

Our results show that, as regards generalization across situations/over the future, dysphoric sport participants generalize less following a success performance compared to non-

dysphoric sport participants. As for generalization to the self, dysphoric sport participants generalize slightly *less* following a success performance, but *more* following a failure performance. Actually, they displayed the same amount of negative and positive generalization. In general, these results thus replicate the findings of Klar and colleagues (1997) and van den Heuvel (2012).

Furthermore, our findings cannot be explained by the alternate hypothesis put forward by Falco, Peynircio and Hohman (2014) that more dysphoric sport participants recalled more remote performances than non-dysphoric sport participants, which in turn could lead to more generalization. In the present study the proportion of participants whose latest performance dated back one week or less did not differ between dysphoric and non-dysphoric individuals. We also checked whether the ratings of the negative or positive performance differed between the dysphoric and non-dysphoric sport participants: a more negative rating of negative performances and a less positive rating of positive performances in dysphoric sport participants could explain differences in negative and positive generalization between the two groups. However, we found no such differences between the two groups.

The results have some practical implications. For one, they highlight the importance of focusing on generalizations following success, especially for sport participants with a history of depression and/or who are currently experiencing depressive symptoms. Interestingly, it has been shown that the prevalence of depression in (elite) sport is as high or even higher than in the general population (e.g., Wolanin, Gross, & Hong, 2015; Junge, & Feddermann-Demont, 2016). Moreover, our previous findings on functional attributions during abstract processing of a success also suggest that it is essential to train dysphoric sport participants to use an abstract processing style with internal, controllable, and stable attributions.

In the interest of performance it can be valuable to assess the generalizations to the future that follow success and train this adaptive abstract-functional attributions style, in

particular for more dysphoric sport participants (for an example of an Attribution Training Program, see Orbach, Singer, Price, 1999). In competitive sport it is arguably very important to retain high expectations for future performances because it has been shown that individuals with low expectations perform worse than individuals with high expectations (e.g., Rudisill, 1989). The present study shows that an adaptive abstract processing style with functional causal attributions augments future expectations of success.

There is an important difference between positive generalization that is adaptive and *over*generalization that becomes dysfunctional. Research has focused mainly on negative overgeneralization and clinical problems such as depression or anxiety. However, overgeneralization following success or positive events has been related to mania and bipolar disorder (see Eisner, Johnson, & Carver, 2008; van den Heuvel, Derksen, Eling, & van der Staak, 2012). Indeed, it can be argued that it is possible for an athlete to *over*generalize following a success leading to predictions that he/she will have only impressive performances. Therefore, it is important to assess whether an athlete is actually *over*generalizing. However, practical cut-offs of dysfunctional negative or positive *over*generalization are currently unknown. Therefore, such markers could prove to be informing in a sport context and establishing them deserves further attention in future studies.

Limitations

This study has several limitations. A major limitation is the amount of dropout. Many sport participants closed the online experiment due to the length of the study. Therefore, we can also question the motivation of the participants that did complete the study. In an attempt to address this issue, we have included an attention check question and have excluded those participants who failed to answer this correctly. In spite of this, limited participant motivation may account for the low Cronbach's alpha value for the questionnaire assessing positive generalization to the self.

Our number of professional athletes (n = 64) was unfortunately too low to examine the effects of processing mode in a professional sample. As such it remains plausible that for professional athletes the effects of processing mode would be more clear because they invest more time in their sport, and furthermore, because their sport could arguably be more important for their self-concept (see also Van Lier et al., 2015a). Therefore recruiting a professional athlete sample might be an important next step for future studies.

Conclusion

Based on the results of this study, sport psychologists and/or practitioners should encourage recreational sport participants and athletes to focus on how they process successes, especially those experiencing depressive symptoms. This study shows that these dysphoric sport participants show less positive generalization. Moreover, in general an abstract processing style with functional internal, controllable and stable attributions can really boost the belief in a positive outcome of future performances and may enhance self-worth.

References

Beck, A. T. (1976). *Cognitive therapy and emotional disorders*. New York: Meridian.

Biddle, S., Hanrahan, S. & Sellars, C. (2001) Attributions: Past, present and future. In: *Handbook of sport psychology*. Eds: Singer, R., Hausenblas, H. & Janelle C. 2nd edition. New York: Wiley. 444-471.

Carver, C. S. (1998). Generalization, adverse events, and development of depressive symptoms. *Journal of Personality*, *66*, 607–19. doi:10.1111/1467-6494.00026

Carver, C. S., & Ganellen, R. J. (1983). Depression and components of self-punitiveness: high standards, self-criticism, and overgeneralization. *Journal of Abnormal Psychology*, *92*, 330–7. doi:10.1037/0021-843X.92.3.330

Eisner, L. R., Johnson, S. L., & Carver, C. S. (2008). Cognitive responses to failure and success relate uniquely to bipolar depression versus mania. *Journal of Abnormal Psychology*, *117*, 154–63. doi:10.1037/0021-843X.117.1.154

Epstein, S. (1992). Coping ability, negative self-evaluation, and overgeneralization: experiment and theory. *Journal of Personality and Social Psychology*, *62*, 826–36.

Franck, E., De Raedt, R., Barbez, C., & Rosseel, Y. (2008). Psychometric properties of the Dutch Rosenberg self-esteem scale. *Psychologica Belgica*, *48*, 25-34. doi:10.5334/pb-48-1-25

Hetherington, K., & Moulds, M. L. (2013). Does mode of processing during a positive experience have consequences for affect? *Journal of Behavior Therapy and Experimental Psychiatry*, *44*, 165–171. doi:10.1016/j.jbtep.2012.10.002

Junge, A., & Feddermann-Demont, N. (2016). Prevalence of depression and anxiety in top-level male and female football players. *BMJ Open Sport & Exercise Medicine*, *2*, e000087. doi:10.1136/bmjsem-2015-000087

Kernis, M. H., Brockner, J., & Frankel, B. S. (1989). Self-esteem and reactions to failure: The mediating role of overgeneralization. *Journal of Personality and Social Psychology*, *57*, 707–714. doi:10.1037//0022-3514.57.4.707

Klar, Y., Gabai, T., & Baron, Y. (1997). Depression and generalization about the future: Who overgeneralizes what? *Personality and Individual Differences*, *22*, 575–584. doi:10.1016/S0191- 8869(96)00186-9

Le Foll, D., Rascle, O., & Higgins, N. C. (2008). Attributional feedback-induced changes in functional and dysfunctional attributions, expectations of success, hopefulness, and short-term persistence in a novel sport. *Psychology of Sport and Exercise*, *9*, 77–101. doi:10.1016/j.psychsport.2007.01.004

Libby, L. K., Valenti, G., Pfent, A., & Eibach, R. P. (2011). Seeing failure in your life: Imagery perspective determines whether self-esteem shapes reactions to recalled and imagined failure. *Journal of Personality and Social Psychology*, *101*, 1157–73. doi:10.1037/a0026105

Lissek, S., Biggs, A. L., Rabin, S. J., Cornwell, B. R., Alvarez, R. P., Pine, D. S., & Grillon, C. (2008). Generalization of conditioned fear-potentiated startle in humans: Experimental validation and clinical relevance. *Behaviour Research and Therapy*, *46*, 678–687. doi:10.1016/j.brat.2008.02.005

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales (Second edition).* Sydney: Psychology Foundation.

Moberly, N. J., & Watkins, E. R. (2006). Processing Mode Influences the Relationship Between Trait Rumination and Emotional Vulnerability. *Behavior Therapy*, *37*, 281–291. doi:10.1016/j.beth.2006.02.003

Nelis, S., Holmes, E. a., Palmieri, R., Bellelli, G., & Raes, F. (2015). Thinking Back about a Positive Event: The Impact of Processing Style on Positive Affect. *Frontiers in Psychiatry*, *6*, 1–13. doi:10.3389/fpsyt.2015.00003

Rimes, K. A., &Watkins, E. (2005). The effects of self-focused rumination on global negative self-judgments in depression. *Behaviour Research and Therapy*, *43*, 1673–1681. doi:10.1016/j.brat.2004.12.002

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Uphill, M. A., & Dray, K. (2009). Giving yourself a good beating : appraisal, attribution, rumination, and counterfactual thinking. *Journal of Sports Science & Medicine*, *8*, 5–12.

van den Heuvel, T. J., Derksen, J. J. L., Eling, P. A. T. M., & van der Staak, C. P. F. (2012). An investigation of different aspects of overgeneralization in patients with major depressive disorder and borderline personality disorder. *British Journal of Clinical Psychology*, *51*, 376–395. doi:10.1111/j.2044-8260.2012.02034.x

Van Lier, J., Vervliet, B., Vanbrabant, K., Lenaert, B., & Raes, F. (2014). Abstract Thinking about Negative Events in Dysphoric Students Leads to Negative Generalization. *Journal of Experimental Psychopathology*, *5*, 314–328. doi:10.5127/jep.037913

Van Lier, J., Moulds, M. L., & Raes, F. (2015a). Abstract "why" Thoughts About Success Lead to Greater Positive Generalization in Sport Participants. *Frontiers in Psychology*, *6*, 1–9. doi:10.3389/fpsyg.2015.01783

Van Lier, J., Vervliet, B., Boddez, Y., & Raes, F. (2015b). "Why is everyone always angry with me?!": When thinking "why" leads to generalization. *Journal of Behavior Therapy and Experimental Psychiatry*, *47*, 34–41. doi:10.1016/j.jbtep.2014.11.008

Vassilopoulos, S. P., & Watkins, E. R. (2009). Adaptive and maladaptive self-focus: a pilot extension study with individuals high and low in fear of negative evaluation. *Behavior therapy*, *40*(2), 181–9. doi:10.1016/j.beth.2008.05.003

Watkins, E. (2004). Adaptive and maladaptive ruminative self-focus during emotional processing. *Behaviour Research and Therapy*, *42*(9), 1037–52. doi:10.1016/j.brat.2004.01.009

Watkins, E. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*, 163-206. doi:10.1037/0033-2909.134.2.163

Watkins, E., & Moulds, M. (2005). Distinct modes of ruminative self-focus: impact of abstract versus concrete rumination on problem solving in depression. *Emotion, 5*, 319–28. doi:10.1037/1528-3542.5.3.319

Watkins, E. (2011). Dysregulation in level of goal and action identification across psychological disorders. *Clinical Psychology Review, 31*, 260–278. doi:10.1016/j.cpr.2010.05.004

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063–1070. doi:10.1037/0022-3514.54.6.1063

Weiner, B. (1986). *An attributional theory of motivation and emotion*. New York: Springer-Verlag

Werner-Seidler, A., & Moulds, M. L. (2012). Mood repair and processing mode in depression. *Emotion, 12*, 470–8. doi:10.1037/a0025984

Wolanin, A., Gross, M., & Hong, E. (2015). Depression in athletes: prevalence and risk factors. *Current Sports Medicine Rep, 14*, 56–60.

Zunick, P. V., Fazio, R. H., & Vasey, M. W. (2015). Directed abstraction: Encouraging broad, personal generalizations following a success experience. *Journal of Personality and Social Psychology*, *109*, 1–19. doi:10.1037/pspa0000027

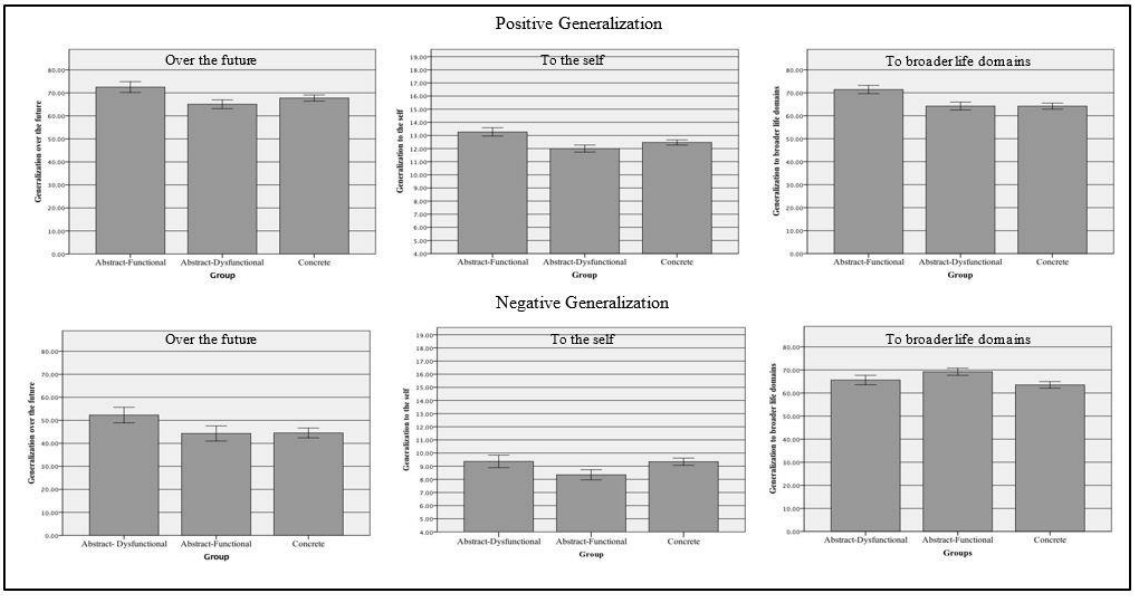

Figure 1. Means of positive and negative generalization for Abstract-Dysfunctional, Abstract-Functional and Concrete group (error bars denote 1 SE of the mean).

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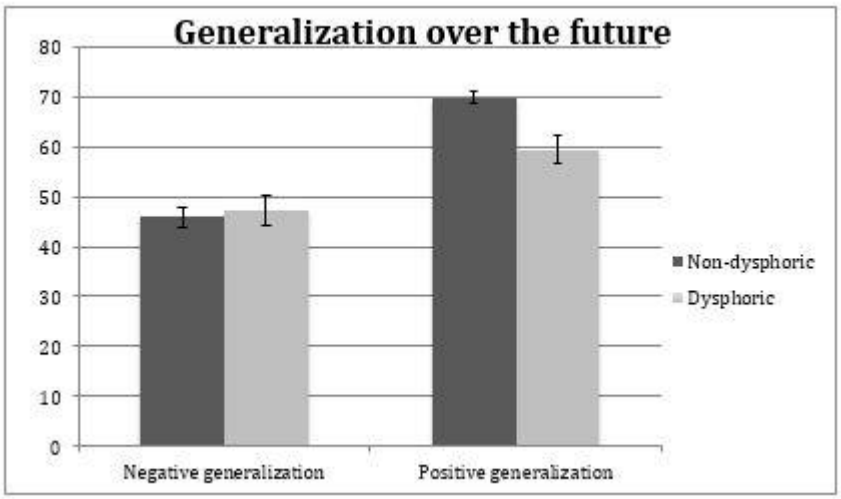

Figure 2. Means of negative and positive generalization over the future for non-dysphoric and dysphoric sport participants (error bars denote 1 SE of the mean).

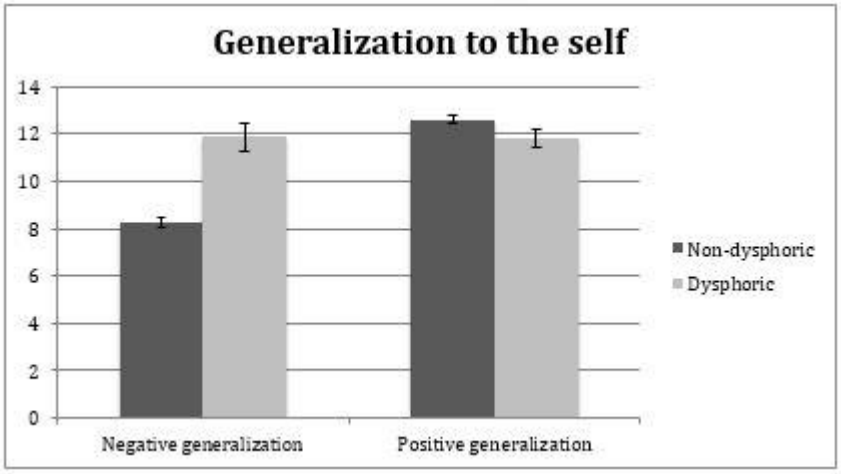

Figure 3. Means of negative and positive generalization to the self for non-dysphoric and dysphoric sport participants (error bars denote 1 SE of the mean).

Table 1: Results of the regression analysis for positive generalization

Variables	*B*	*SE*	*β*	*t*	*p*
Positive generalization over the future					
Condition[1]	0.50	1.97	.01	0.26	.80
Self-Esteem	0.74	0.31	.18	2.35	.02
Condition x Self-Esteem	0.08	0.44	.01	0.19	.85
Lateral Positive Generalization	-0.76	0.33	-.19	-2.32	.02
Condition x Lateral Positive Generalization	0.47	0.44	.09	1.08	.28
Positive generalization to their self-concept					
Condition[1]	-.06	.26	-.01	-.22	.83
Self-Esteem	.04	.04	.07	.92	.36
Condition x Self-Esteem	-.03	.06	-.03	-.42	.67
Lateral Positive Generalization	-.29	.04	-.51	-6.74	< .001
Condition x Lateral Positive Generalization	.09	.06	.11	1.48	.14
Positive generalization to broader life domains					
Condition[1]	-3.32	1.71	-.10	-1.95	.05
Self-Esteem	1.20	0.27	.33	4.51	< .001
Condition x Self-Esteem	0.52	0.38	.10	1.36	.18
Lateral Positive Generalization	-0.25	0.28	-.07	-0.91	.37
Condition x Lateral Positive Generalization	0.60	0.38	.12	1.58	.11

[1]Condition was dummy coded with abstract = 0 and concrete = 1

Table 2: Results of the regression analysis for negative generalization

Variables	*B*	*SE*	*β*	*t*	*p*
Negative generalization over the future					
Condition[1]	-2.886	3.187	-.050	-.906	.366
Self-Esteem	-1.083	.580	-.171	-1.868	.063
Condition x Self-Esteem	.715	.898	.076	.796	.427
Lateral Positive Generalization	-1.276	.669	-.184	-1.906	.057
Condition x Lateral Positive Generalization	1.030	.975	.106	1.056	.292
Negative generalization to their self-concept					
Condition[1]	.363	.328	.049	1.108	.269
Self-Esteem	-.321	.059	-.390	-5.416	.000
Condition x Self-Esteem	.128	.092	.105	1.385	.167
Lateral Positive Generalization	.269	.068	.299	3.940	.000
Condition x Lateral Positive Generalization	.121	.100	.096	1.206	.229
Negative generalization to broader life domains					
Condition[1]	-2.597	1.736	-.076	-1.496	.136
Self-Esteem	1.276	.312	.344	4.087	.000
Condition x Self-Esteem	.166	.488	.030	.341	.734
Lateral Positive Generalization	-.145	.364	-.035	-.399	.690
Condition x Lateral Positive Generalization	-.643	.538	-.111	-1.194	.234

[1]Condition was dummy coded with abstract = 0 and concrete = 1